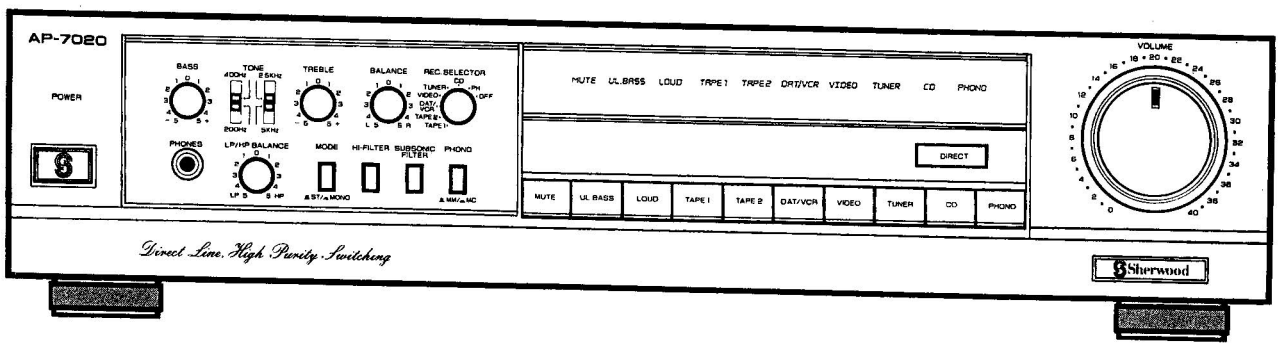
SERVICE MANUAL

AP-7020

STEREO PRE-AMPLIFIER



■CONTENTS

TO SERVICE PERSONNEL.....3
SPECIFICATIONS.....4
VOLTAGE CHART.....5
BLOCK DIAGRAM.....6
ELECTRICAL PARTS LIST.....7
TOP & BOTTOM VIEW OF P.C BOARDS.....11
MECHANICAL PARTS LIST & EXPLODED VIEW OF CABINET & CHASSIS.....17
POINT TO POINT WIRING DIAGRAM.....20
SCHEMATIC DIAGRAM.....SEPARATE SHEET

NOTICE

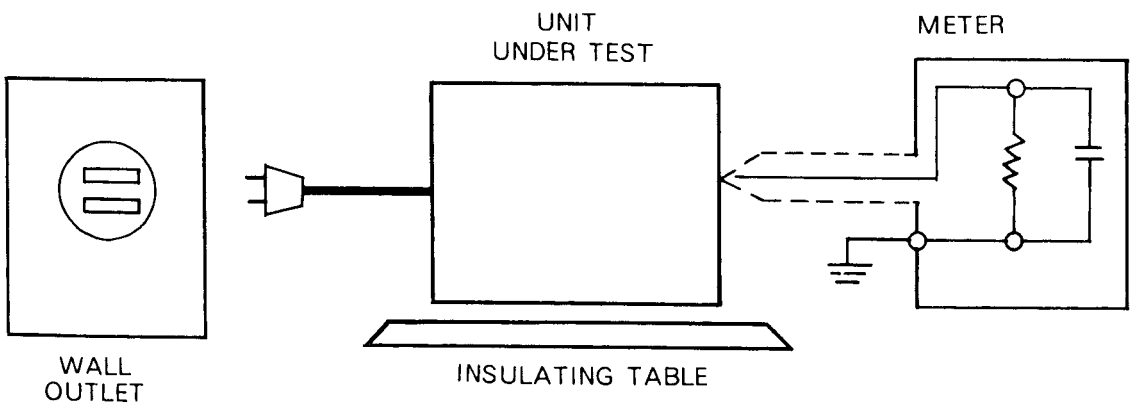
- This manual is for authorized and qualified service personnel, so the basic service procedure and commonsense of safety are not described in this manual.
- Sherwood always makes every endeavor to improve the products, therefore the specifications and data provided are subject to change without notice.

Sherwood

To Service Personnel

1. Critical Components Information.
   The ⚠ marked components on schematic diagram and parts list must be replaced with the parts having specifications equal to those originally installed.

2. Leakage Current Measurement(For 120V Version only).
   When the service has been completed, make sure that all exposed conductive surfaces are properly insulated from the power supply circuits.
   - Leakage current meter should have an input impedance of 1500 ohms resistive shunted by 0.15 μF capacitor.
   - Leakage current shall not be exceed 0.5mA.



3. Turn the unit OFF, and disconnect the power supply cord during disassembly and replacement of parts.

4. When the service has been completed, be sure to check all protective devices and spacings before returning the unit to customer.

Specifications

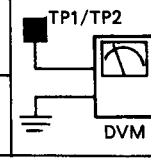
PHONO RIAA DEVIATION 20Hz—20KHz
at Tape Out ..... ±0.5dB
TONE CONTROL
Bass, at 100Hz(Turn over F : 400Hz) ..... ±8dB
at 50Hz(Turn over F : 200Hz) ..... ±8dB
Treble, at 10KHz(Turn over F : 2.5KHz) ..... ±8dB
at 20KHz(Turn over F : 4KHz) ..... ±8dB
LOUDNESS CONTOUR
at 100Hz ..... +6dB
at 10KHz ..... +3dB
ULTRA LOW BASS EQ(12dB/OCT)
at 15Hz ..... −9dB
at 30Hz ..... +6dB
SUB-SONIC FILTER(12dB/OCT)
at 20Hz ..... −3dB
HIGH FILTER(12dB/OCT)
at 7KHz ..... −3dB
THD, CD input
20Hz—20KHz, 150mV input, VOL MAX, 1V out 0.008%
1KHz, 500mV input, VOL adjusted 1V out 0.005%
1KHz, 500mV input, VOL adjusted 0.3V out 0.01%
1KHz, 500mV input, VOL adjusted 0.03V out 0.02%
S/N Ratio, "A" WTD/UNWTD
PHONO(MC): 0.25mV input, 1K ohm terminated, VOL MAX 1V out 77/66dB
5mV input, 100ohm terminated, VOL adjusted 1V out 77/65dB
5mV input, 100ohm terminated, VOL adjusted 0.3V out 85/75dB
PHONO(MM): 2.5mV input, 1K ohm terminated, VOL MAX 1V out 80/74dB
5mV input, 2.2K ohm termineted, VOL adjusted 1V out 80/76dB
5mV input, 2.2K ohm terminated, VOL adjusted 0.3V out 92/85dB
CD: 150mV input, 1K ohm terminated, VOL MAX 1V out 96/85dB
500mV input, 22K ohm terminated, VOL adjusted 1V out 97/90dB
500mV input, 22K ohm terminated, VOL adjusted 0.3V out 100/92dB
500mV input, 22K ohm terminated, VOL adjusted 0.03V out 107/99dB
THE OTHER INPUT CROSSTALK VOL adjusted 0.3V out 80dB
PHONO(MM)→CD: 1KHz 5mV input, 22K ohm terminated 80dB
10KHz 5mV input, 22K ohm terminated 80dB
CD→PHONO(MM): 1KHz 500mV input, 22K ohm terminated 80dB
10KHz 500mV input, 22K ohm terminated 80dB
CD→TUNER: 1KHz 500mV input, 22K ohm terminated 90dB
10KHz 500mV input, 22K ohm terminated 89dB
CHANNEL CROSSTALK VOL adjusted 0.3V out
CD→1KHz 500mV input, 22K ohm terminated 80dB
10KHz 500mV input, 22K ohm terminated 60dB
FREQUENCY RESPONSE, CD, −3dB point ..... 5Hz—150KHz
POWER CONSUMPTION 25W
DIMENSION(WxHxD) 440x92x280mm
WEIGHT 5.1Kg

POWER SUPPLY	
A : U.S.A & CANADIAN MODEL	120VAC, 60Hz
B : MULTI—VOLTAGE MODEL	120/220VAC, 60/50Hz
C : GENERAL EUROPEAN MODEL	220VAC, 50Hz
D : WEST GERMAN & ITALIAN MODEL	220VAC, 50Hz
E : BRITISH & AUSTRALIAN MODEL	240VAC, 50Hz
F : SWISS & SCANDINABIAN COUNTRY	220VAC, 50Hz

Note: Specifications and design subject to change without notice for improvements.

Electrical Adjustment

※ Before making adjustment operate the applionce for more than 2 minutes.
Selector ..... PHONO

Subject	Feed Signal		Setting Appliance	Measure Output	Adjust Point	Adjust For	Remark
	From	To					
Neutral			Between TPI & Chassis GND	Connect DVM	VRI-L (Lch)	DC 0V	
Voltage			Between TP2 & Chassis GND	Connect DVM	VRI-R (Rch)	DC 0V	

Voltage Chart

● **IC** (ALL OP AMP IC)

(Unit : Volt)

Pin No.	1	2	3	4	5	6	7	8
Voltage	0	0	0	−17.8	0	0	0	+17.8

● **TRANSISTORS**

(Unit : Volt)

Ref.No.	Device	Base	Collector	Emitter
Q101L/R,Q103L/R	2SC3329	+0.6	+24.7	0
Q102L/R,Q104L/R	2SA 1316	−0.6	−24.7	0
Q105L/R	2SA 970	+24.7	+0.6	+25.3
Q106L/R	2SC 2240	−24.7	−0.6	−25.3
Q107L/R	KTD1406Y	+0.6	+30	0
Q108L/R	KTB 1366Y	−0.6	−30	0
Q122L/R	2SA 970	+27	+0.8	+27.6
Q123L/R	MPS A06	+0.8	+32	+0.2
Q124L/R	MPS A56	−0.8	−32	−0.2
Q201L/R	2SA 970	0	−27.3	+0.6
Q202L/R	2SA 970	0	−29	+0.6
Q203L/R	2SA 970	+30	+0.6	+30.6
Q204L/R	2SC 2240	−29	−27.3	−29.6
Q205L/R	2SC 2240	−27.3	−0.85	−27.9
Q206L/R	MPS A06	+0.9	+31	+0.3

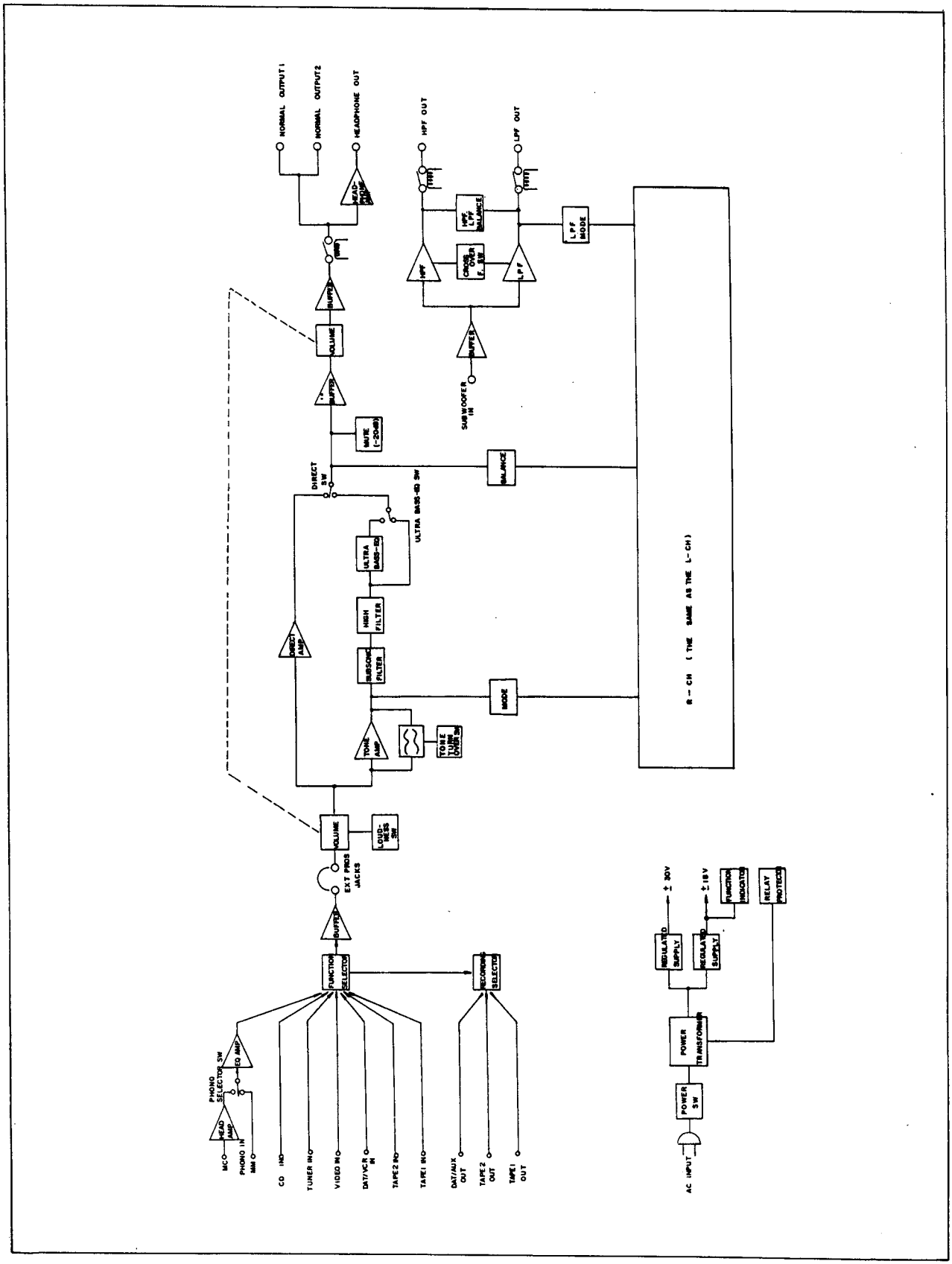
(Unit : Volt)

Ref. No.	Device	Base	Collector	Emitter
Q207L/R	MPS A56	−0.85	−31	−0.25
Q231L/R	2SA 970	0	−27.4	+0.6
Q232L/R	2SA 970	0	−28.6	+0.6
Q233L/R	2SC 2240	−28.6	−27.4.	−29.2
Q234L/R	2SA 970	+27.7	+28.3	+0.8
Q235L/R	2SC 2240	−27.4	−0.4	−28
Q236L/R	MPS A06	+0.8	+30	+0.2
Q237L/R	MPS A56	−0.4	−30	+0.2
Q321L/R	MPS 9633S	+0.6	+7.0	0
Q322L/R	MPS A06	+9	+27.8	+8.4
Q323L/R	MPS A56	+7.0	0	+7.6
Q401	KTD 1406Y	+31.4	+41	+32
Q402	KTB 1366Y	−31.4	−41	−32
Q403	KTC 1815Y	+18.6	+31.4	+18
Q403	KTC 1015Y	−18.6	−31.4	−18

● **FUSES** ⚠

Ref.No.		F171	F172	F401,F402
Verision	Voltage			
A	120VAC/60Hz	N·B 0.5A	—	N·B 0.75A
B	120/220VAC,60/50Hz	N·B 0.5A	N·B 1A	N·B 0.75A
C,D,F	220VAC/50Hz	T 500mA	–	T 630mA
E	240VAC/50Hz	T 500mA	—	T 630mA

Block Diagram



Electrical Parts List

MAIN BOARD 4002117600

REF.NO.	PARTS NO.	DESCRIPTION	POSITION	VERSION
•ICS				
IC101	2168020106	NJM 2068 DD	1C	
IC102	2168020106	NJM 2068 DD	1C	
IC103	2168020106	NJM 2068 DD	1C	
IC104	2168020106	NJM 2068 DD	1C	
IC105	2168020106	NJM 2068 DD	1C	
IC106	2168020106	NJM 2068 DD	1B	
IC201	2168020106	NJM 2068 DD	3B	
IC202	2168020106	NJM 2068 DD	3A	
IC303	2168020106	NJM 2068 DD	2A	
IC301	2168020106	NJM 2068 DD	2A	
IC302	2168020106	NJM 2068 DD	2B	
IC303	2168020106	NJM 2068 DD	1B	
IC401	2108600101	LC 7818	2A	
IC402	2168600106	LC 7918	2A	
•TRANSISTORS				
Q101L/R	2008607114	2SC 3329	1D	
Q102L/R	2008207107	2SA1316	1D	
Q103L/R	2008607114	2SC 3329	1D	
Q104L/R	2008207107	2SA1316	1D	
Q105L/R	2008206104	KTA 970	1D	
Q106L/R	2208606108	KTC 2240	1D	
Q107L/R	2028406121	KTD 1406	1D	
Q108L/R	2028406124	KTB1366	1D, 2D	
Q121L/R	2018207106	FET 2SK 117	2D	
Q122L/R	2008206104	KTA 970	2D	
Q123L/R	2008609102	MPSA 06	2D	
Q124L/R	2008209102	MPS A56	2D	
Q201L/R	2008206104	KTA 970	3D	
Q202L/R	2008206104	KTA 970	3D	
Q203L/R	2008206104	KTA 970	3D	
Q204L/R	2008606108	KTC 2240	3D	
Q205L/R	2008606108	KTC 2240	3D	
Q206L/R	2008609102	MPS A06	3D	
Q207L/R	2008209102	MPS A56	3D	
Q231L/R	2008206104	KTA 970	3B	
Q232L/R	2008206104	KTA 970	3B	
Q233L/R	2008606108	KTC 2240	3B	
Q234L/R	2008206104	KTA 970	3B	
Q235L/R	2008606108	KTC 2240	3B	
Q236L/R	2008609102	MPS A06	3B	
Q237L/R	2008209102	MPS A56	3B	
Q321L/R	2008609107	MPS 9633C	1B	
Q322L/R	2008609102	MPS A06	1B	
Q323L/R	2008209102	MPS A56	1B	
Q401	2028406121	KTD 1406	1A	
Q402	2028406124	KTB 1366	2A	
Q403	2208206104	KTC 1815	1A	
Q404	2208206105	KTA 1015	1A	
Q431	2008609102	MPS A06	1A	
Q432	2008609102	MPS A06	1A	
Q801L/R	2008610102	2SD 1302	2C	
Q802L/R	2008610102	2SD 1302	2C	
Q803	2008209102	MPS A56	2C	
Q804	2008610102	2SD 1302	3C	
Q806	2008609102	MPS A06	3C	
•DIODES				
D101L/R	2058306101	IN4148	1D	
D102L/R	2058306101	IN4148	1D	
D121L/R	2058306101	IN4148	2D	
D122L/R	2058306101	IN4148	2D	
⚠ D123	2058106100	IN4002	2D	
⚠ D141	2058106100	IN4002	2D	
⚠ D142	2058106100	IN4002	2C	
⚠ D143	2058106100	IN4002	2C	
⚠ D144	2058106100	IN4002	2C	
⚠ D145	2058106100	IN4002	2C	
⚠ D146	2058106100	IN4002	2B	
⚠ D147	2058106100	IN4002	2B	
D201L/R	2058306101	IN4148	3D	
D202L/R	2058306101	IN4148	3D	
D203L/R	2058306101	IN4148	3C, 3D	
D204L/R	2058306101	IN4148	3D	
D231L/R	2058306101	IN4148	3B	
D232L/R	2058306101	IN4148	3B	
D233L/R	2058306101	IN4148	3B	
D234L/R	2058306101	IN4148	3B	

REF.NO.	PARTS NO.	DESCRIPTION	POSITION	VERSION
D301	2058106100	IN4002	2A	
D302	2058106100	IN4002	2B	
D303	2058106100	IN4002	1A	
D304	2058106100	IN4002	1A	
D321L/R	2058106100	IN4002	1B	
D401	2058106100	IN4002	2A	
D402	2058106100	IN4002	2A	
D403	2058106100	IN4002	2A	
D404	2058106100	IN4002	2A	
D405	2058599111	Zener DZ 18BM	1A	
D431	2058106100	IN4002	1A	
D432	2058106100	IN4002	1A	
D433	2058506100	IN4002	1A	
D434	2058599111	Zener DZ18BM	1A	
•COILS				
L101L/R	2648601470	Inductor Coil 50 μH	2D	D
R101L/R	2648601470	Inductor Coil 50 μH	2D	D
•RELAYS				
RLY101	5528001040	RZ-24W	2D	
RLY141	5528001040	RZ-24W	2D	
RLY142	5528001040	RZ-24W	2C	
RLY143	5528001040	RZ-24W	2C	
RLY144	5528001040	RZ-24W	2C	
RLY145	5528001040	RZ-24W	2C	
RLY146	5528001040	RZ-24W	2B	
RLY147	5528001040	RZ-24W	2B	
RLY301	5528001040	RZ-24W	2A	
RLY302	5528001040	RZ-24W	2B	
RLY303	5528001040	RZ-24W	1A	
RLY304	5528001040	RZ-24W	1A	
•RESISTORS				
VR101L/R	3248347120	Semi 470ohm(B)	1D	
R101L/R	3069339970	C.F 3.3ohm 1/6 WJ	1D	
R102L/R	3069101970	C.F 100ohm 1/6 WJ	1D	
R103L/R	3069102970	C.F 1K ohm 1/6 WJ	1D	
R104L/R	3069821970	C.F 820ohm 1/6 WJ	1D	
R105L/R	3069103970	C.F 10K ohm 1/6 WJ	1D	
R106L/R	3069433970	C.F 43K ohm 1/6 WJ	1D	
R107L/R	3069433970	C.F 43K ohm 1/6 WJ	1D	
R108L/R	3069222970	C.F 2.2K ohm 1/6 WJ	1D	
R109L/R	3069222970	C.F 2.2K ohm 1/6 WJ	1D	
R110L/R	3069392970	C.F 3.9K ohm 1/6 WJ	1D	
R111L/R	3069392970	C.F 3.9K ohm 1/6 WJ	1D	
R112L/R	3069560970	C.F 56ohm 1/6 WJ	1D	
R113L/R	3069209970	C.F 2ohm 1/6 WJ	1D	
R114L/R	3069339970	C.F 3.3ohm 1/6 WJ	1D	
R115L/R	3069339970	C.F 3.3ohm 1/6 WJ	1D	
R116L/R	3069471970	C.F 470ohm 1/6 WJ	1D	
R117L/R	3069104970	C.F 100K ohm 1/6 WJ	2D	
R118L/R	3069471970	C.F 470ohm 1/6 WJ	2D	
R119L/R	3069471970	C.F 470ohm 1/6 WJ	2D	
R120L/R	3069331970	C.F 330ohm 1/6 WJ	2D	
R121L/R	3069913970	C.F 91K ohm 1/6 WJ	2D	
R122L/R	3069103970	C.F 10ohm 1/6 WJ	2D	
R123L/R	3069913970	C.F 91K ohm 1/6 WJ	2D	
R124L/R	3069331970	C.F 330ohm 1/6 W	2D	
R125L/R	3069103970	C.F 10K ohm 1/6 WJ	2D	
R126L/R	3069362970	C.F 3.6K ohm 1/6 WJ	2D	
R127L/R	3069242970	C.F 2.4K ohm 1/6 WJ	2D	
R128L/R	3069933970	C.F 33K ohm 1/6 WJ	2D	
R129L/R	3069560970	C.F 56ohm 1/6 WJ	2D	
R130L/R	3069683970	C.F 68K ohm 1/6 WJ	2D	
R131L/R	3069153970	C.F 15K ohm 1/6 WJ	2D	
R132L/R	3069103970	C.F 10K ohm 1/6 WJ	2D	
R133L/R	3069100970	C.F 10ohm 1/6 WJ	2D	
R134L/R	3069100970	C.F 10ohm 1/6 WJ	2D	
R135L/R	3069222970	C.F 2.2K ohm 1/6 WJ	2D	
R136L/R	3069104970	C.F 100K ohm 1/6 WJ	2D	
R137L/R	3069471970	C.F 470ohm 1/6 WJ	3D 2D	
R138L/R	3069371970	C.F 470ohm 1/6 WJ	3D	
R139	3069101970	C.F 100ohm 1/6 WJ	1D	
R141L/R	3069101970	C.F 100ohm 1/6 WJ	1C	D
R142L/R	3069102970	C.F 1K ohm 1/6 WJ	1C	
R143L/R	3069473970	C.F 47K ohm 1/6 WJ	1C	
R144L/R	3069471970	C.F 470ohm 1/6 WJ	1C	
R145L/R	3069104970	C.F 100K ohm 1/6 WJ	1C	
R146	3069471970	C.F 470ohm 1/6 WJ	1C	
R147	3069471970	C.F ohm 1/6 WJ	1C	

REF. NO.	PARTS NO.	DESCRIPTION	POSITION	VERSION
R148L/R	3069101970	C.F 100ohm 1/6 WJ	1 C	D
R149L/R	3069102970	C.F 1K ohm 1/6 WJ	1 C	
R150L/R	3069473970	C.F 47K ohm 1/6 WJ	1 C	
R151L/R	3069471970	C.F 470ohm 1/6 WJ	1 C	
R152L/R	3069104970	C.F 100K ohm 1/6 WJ	1 C	
R153	3069471970	C.F 470ohm 1/6 WJ	1 C	
R154	3069471970	C.F 470ohm 1/6 WJ	1 C	
R155L/R	3069101970	C.F 100ohm 1/6 WJ	1 C	D
R156L/R	3069102970	C.F 1K ohm 1/6 WJ	1 C	
R157L/R	3069473970	C.F 47K ohm 1/6 WJ	1 C	
R158L/R	3069471970	C.F 470ohm 1/6 WJ	1 C	
R159L/R	3069104970	C.F 100K ohm 1/6 WJ	1 C	
R160	3069471970	C.F 470ohm 1/6 WJ	1 C	
R161	3069471970	C.F 470ohm 1/6 WJ	1C	
R162L/R	3069101970	C.F 100ohm 1/6 WJ	1C	D
R163L/R	3069102970	C.F 1K ohm 1/6 WJ	1C	
R164L/R	3069473970	C.F 47K ohm 1/6 WJ	1C	
R165L/R	3069471970	C.F 470ohm 1/6 WJ	1C	
R166L/R	3069104970	C.F 100K ohm 1/6 WJ	1C	
R167	3069471970	C.F 470ohm 1/6 WJ	1C	
R168	3069471970	C.F 470ohm 1/6 WJ	1C	
R169L/R	3069101970	C.F 100ohm 1/6 WJ	1C	D
R170L/R	3069102970	C.F 1K ohm 1/6 WJ	1C	
R171L/R	3069473970	C.F 47K ohm 1/6 WJ	1B,1C	
R172L/R	3069481970	C.F 470ohm 1/6 WJ	1B,1C	
R173L/R	3069104970	C.F 100K ohm 1/6 WJ	1B,1C	
R174	3069471970	C.F 470ohm 1/6 WJ	1B	
R175	3069471970	C.F 470ohm 1/6 WJ	1C	
R176L/R	3069101970	C.F 100ohm 1/6 WJ	1B	D
R177L/R	3069102970	C.F 1K ohm 1/6 WJ	1B	
R178L/R	3069473970	C.F 47K ohm 1/6 WJ	1B	
R179L/R	3069471970	C.F 470ohm 1/6 WJ	1B	
R180L/R	3069104970	C.F 100K ohm 1/6 WJ	1B	
R181	3069471970	C.F 470ohm 1/6 WJ	1B	
R182	3069471970	C.F 470ohm 1/6 WJ	1B	
R183	3069101970	C.F 100ohm 1/6 WJ	2B	
R201L/R	3069471970	C.F 470ohm 1/6 WJ	3D	
R202L/R	3069823970	C.F 82K ohm 1/6 WJ	3D	
R203L/R	3069221970	C.F 220ohm 1/6 WJ	3D	
R204L/R	3069221970	C.F 220ohm 1/6 WJ	3C,3D	
R205L/R	3069273970	C.F 27K ohm 1/6 WJ	3D	
R206L/R	3069221970	C.F 220ohm 1/6 WJ	3D	
R207L/R	3069221970	C.F 220ohm 1/6 WJ	3D	
R208L/R	3069102970	C.F 1K ohm 1/6 WJ	3C,3D	
R209L/R	3069911970	C.F 910ohm 1/6 WJ	3D	
R210L/R	3069181970	C.F 180ohm 1/6 WJ	3D	
R211L/R	3069332970	C.F 3.3K ohm 1/6 WJ	3D	
R212L/R	3069330970	C.F 33ohm 1/6 WJ	3D	
R213L/R	3069330970	C.F 33ohm 1/6 WJ	3D	
R214L/R	3069471970	C.F 460ohm 1/6 WJ	3D	
R215L/R	3069104970	C.F 100K ohm 1/6 WJ	3D	
R216L/R	3069471970	C.F 470ohm 1/6 WJ	3C,3D	
R217L/R	3069471970	C.F 470ohm 1/6 WJ	3D	
R218L/R	3069101970	C.F 100ohm 1/6 WJ	3D	
R221L/R	3069393970	C.F 39K ohm 1/6 WJ	2B	
R222L/R	3069132970	C.F 1.3K ohm 1/6 WJ	2B	
R223L/R	3069181970	C.F 180ohm 1/6 WJ	2B	
R231L/R	3069471970	C.F 470ohm 1/6 WJ	3B	
R232L/R	3069101970	C.F 100ohm 1/6 WJ	3B	
R233L/R	3069333970	C.F 33K ohm 1/6 WJ	3B	
R234L/R	3069222970	C.F 2.2K ohm 1/6 WJ	3B	
R235L/R	3069222970	C.F 2.2K ohm 1/6 WJ	3B	
R236L/R	3069102970	C.F 1K ohm 1/6 WJ	3B	
R237L/R	3069273970	C.F 27K ohm 1/6 WJ	3B	
R238L/R	3069102970	C.F 1K ohm 1/6 WJ	3B	
R239L/R	3069911970	C.F 910ohm 1/6 WJ	3B	
R241L/R	3069102970	C.F 1K ohm 1/6 WJ	3B	
R242L/R	3069223970	C.F 22K ohm 1/6 WJ	3B	
R243L/R	3069332970	C.F 3.3K ohm 1/6 WJ	3B	
R244L/R	3069330970	C.F 33ohm 1/6 WJ	3B	
R245L/R	3069330970	C.F 33K ohm 1/6 WJ	3B	
R246L/R	3069471970	C.F 470ohm 1/6 WJ	3B	
R247L/R	3069104970	C.F 100K ohm 1/6 WJ	3B	
R248L/R	3069471970	C.F 470ohm 1/6 WJ	3B	
R249L/R	3069471970	C.F 470ohm 1/6 WJ	3C	
R251L/R	3069471970	C.F 470ohm 1/6 WJ	3C	
R252L/R	3069104970	C.F 100K ohm 1/6 WJ	3B	
R253L/R	3069753970	C.F 75K ohm 1/6 WJ	3B	
R254L/R	3069155970	C.F 1.5Mohm 1/6 WJ	3B	
R255L/R	3069473970	C.F 47K ohm 1/6 WJ	3B	
R256L/R	3069123970	C.F 12K ohm 1/6 WJ	3A	

REF.NO.	PARTS NO.	DESCRIPTION	POSITION	VERSION
R257L/R	3069302970	C.F 3K ohm 1/6 WJ	3A	
R258L/R	3069683970	C.F 68ohm 1/6 WJ	3A	
R259L/R	3069332970	C.F 3.3K ohm 1/6 WJ	3A	
R260L/R	3069821970	C.F 820ohm 1/6 WJ	3A	
R261L/R	3069471970	C.F 470ohm 1/6 WJ	3A	
R262L/R	3069101970	C.F 100ohm 1/6 WJ	3A	
R263	3069471970	C.F 470ohm 1/6 WJ	3B	
R264	3069471970	C.F 470ohm 1/6 WJ	3B	
R271L/R	3069103970	C.F 10K ohm 1/6 WJ	3A	
R272L/R	3069104970	C.F 100K ohm 1/6 WJ	3A	
R273L/R	3069123970	C.F 12K ohm 1/6 WJ	3A	
R274L/R	3069274970	C.F 270K ohm 1/6 WJ	3A	
R275L/R	3069183970	C.F 18K ohm 1/6 WJ	3A	
R276L/R	3069824970	C.F 820K ohm 1/6 WJ	3A	
R277L/R	3069471970	C.F 470ohm 1/6 WJ	3A	
R278L/R	3069104970	C.F 100K ohm 1/6 WJ	3A	
R279	3069471970	C.F 470ohm 1/6 WJ	3A	
R280	3069471970	C.F 470ohm 1/6 WJ	3A	
R281L/R	3069153970	C.F 15K ohm 1/6 WJ	2A,3A	
R282L/R	3069184970	C.F 180K ohm 1/6 WJ	2A	
R283L/R	3069471970	C.F 470ohm 1/6 WJ	2A,3A	
R284L/R	3069104970	C.F 100K ohm 1/6 WJ	2A	
R285	3069101970	C.F 100ohm 1/6 WJ	3A	
R286	3069101970	C.F 100ohm 1/6 WJ	2A	
R287L/R	3069155970	C.F 1.5Mohm 1/6 WJ	2B	
R288L/R	3069103970	C.F 10K ohm 1/6 WJ	2B	
R289L/R	3069102970	C.F 1K ohm 1/6 WJ	2A,2B	
R301L/R	4069471970	C.F 470ohm 1/6 WJ	2A	
R302L/R	3069104970	C.F 100K ohm 1/6 WJ	2A	
R303L/R	3069471970	C.F 470ohm 1/6 WJ	1A	
R304L/R	3069104970	C.F 100K ohm 1/6 WJ	1A	
R305	3069471970	C.F 470ohm 1/6 WJ	1A	
R306	3069471970	C.F 470ohm 1/6 WJ	1A	
R307L/R	3069471970	C.F 470ohm 1/6 WJ	2B	
R308L/R	3069104970	C.F 100K ohm 1/6 WJ	2B	
R309L/R	3069471970	C.F 470ohm 1/6 WJ	2B	
R310L/R	3069104970	C.F 100K ohm 1/6 WJ	2B	
R311	3069471970	C.F 470ohm 1/6 WJ	2B	
R312	3069471970	C.F 470ohm 1/6 WJ	2B	
R313	3069471970	C.F 470ohm 1/6 WJ	2A	
R321L/R	3069473970	C.F 47K ohm 1/6 WJ	2B	
R322L/R	3069474970	C.F 470ohm 1/6 WJ	1B	
R323L/R	3069224970	C.F 220K ohm 1/6 WJ	1B	
R324L/R	3069153970	C.F 15K ohm 1/6 WJ	1B	
R325L/R	3069102970	C.F 1K ohm 1/6 WJ	1B	
R326L/R	3069220970	C.F 22ohm 1/6 WJ	1B	
R327L/R	3069220970	C.F 22ohm 1/6 WJ	1B	
R330	3069471970	C.F 470ohm 1/6 WJ	1B	
R331	3069471970	C.F 470ohm 1/6 WJ	1B	
R341L/R	3069471970	C.F 470ohm 1/6 WJ	1B	
R342L/R	3069104970	C.F 100K ohm 1/6 WJ	1B	
R343L/R	3069471970	C.F 470ohm 1/6 WJ	1B	
R344L/R	3069104970	C.F 100K ohm 1/6 WJ	1B	
R345	3069471970	C.F 470ohm 1/6 WJ	1B	
R346	3069471970	C.F 470ohm 1/6 WJ	1B	
R401	3039100472	M.O 10ohm 1WJ	1A	
R402	3039100472	M.O 10ohm 1WJ	2A	
R403	3039470472	M.O 470ohm 1WJ	1A	
R404	3039470472	M.O 47ohm 1WJ	2A	
R405	3069183970	C.F 18K ohm 1/6 WJ	1A	
R406	3069183970	C.F 18K ohm 1/6 WJ	2A	
R407	3069332970	C.F 3.3K 1/6 WJ	1A	
R408	3069332970	C.F 3.3K ohm	1A	
R409	3069152970	C.F 1.5K ohm	1A	
R410	3069152970	C.F 1.5K ohm	1A	
R411	3069222970	C.F 2.2K ohm	1A	
R412	3069222970	C.F 2.2K ohm	1A	
R419	3039470572	M.O 470ohm 2WJ	2A	
R420	3039470572	M.O 470ohm 2WJ	2A	
R431	3069472970	C.F 4.7K ohm 1/6 WJ	1A	
R432	3069472970	C.F 4.7K ohm 1/6 WJ	1A	
R433	3069101970	C.F 100ohm	1A	
R434	3069333970	C.F 33K ohm	1A	
R435	3069223970	C.F 2.2K ohm	1A	
R436	3069473970	C.F 47K ohm	1A	
R437	3069102970	C.F 1K ohm	2B	
R438	3069102970	C.F 1K ohm	1A	
R439	3069102970	C.F 1K ohm	1A	
R801L/R	3069103970	C.F 10K ohm	2C	
R802L/R	3069222970	C.F 2.2K ohm	2C	
R803	3069823970	C.F 82K ohm	2C	

Ref.No.	Parts No.	Description	Position	Version
R804	3069103970	C.F 10K ohm	2C	
R805	3069103970	C.F 10K ohm	3C	
R806	3069473970	C.F 47K ohm	3C	
R814	3069473970	C.F 47K ohm	3C	
R815	3069473970	C.F 47K ohm	3C	
R816	3069472970	C.F 4.7K ohm	3C	
• CAPACITORS				
C101	3579473530	Ceramic 0.047μF 50V	1D	
C102L/R	3579102530	Ceramic 1000PF 50V	1D	
C103L/R	3479210121	Electricoly 100μF 10V	1D	
C104L/R	3579473530	Ceramic 0.047μF 50V	1D	
C105L/R	3479210121	Electroly 100μF 10V	1D	
C106L/R	3579473530	Ceramic 0.047μF 50V	1D	
C107L/R	3479222041	Electric 22μF 25V	1D	
C108L/R	3579221130	Ceramic 220PF 50V	1D	
C109L/R	3579221130	Ceramic 220PF 50V	1D	
C110L/R	3579473530	Ceramic 0.047μF 50V	1D	
C111L/R	3479222121	Electric 220μF 10V	1D	
C112L/R	3479222121	Electric 220μF 10V	2D	
C113L/R	3658225201	Tontal 2.2μF 16V	2D	
C114L/R	3679102120	Mylar 0.001μF 100V	2D	
C115L/R	3479222161	Electric 220μF 35V	2D	
C116L/R	3479222161	Electric 220μF 35V	2D	
C111	3579473530	Ceramic 0.047μF 50V	2D	
C122L/R	3579101300	Ceramic 100PF 50V	2D	
C123L/R	3579330130	Ceramic 33PF 50V	2D	
C124L/R	3579150130	Ceramic 15PF 50V	2D	
C125L/R	3479210121	Electric 100μF 10V	2D	
C126L/R	3679273120	Mylar 0.027μF 100V	2D	
C127L/R	3609104120	Mylar 0.1μF 100V	2D	
C128L/R	3409247121	Electric 470μF 10V	2D	
C129L/R	3479220311	Electric 22μF 25V	2D	
C130L/R	3479210971	Electric 1μF 50V	2D	
C131L/R	3679102120	Mylar 0.001μF 100V	2D	
C132L/R	3479247061	Electric 47μF 35V	2D,3D	
C133L/R	3479247061	Electric 47μF 35V	3D	
C141L/R	3579101130	Ceramic 100PF 50V	1C	
C142L/R	3579101130	Ceramic 100PF 50V	1C	
C143L/R	3579331130	Ceramic 330PF 50V	1C	
C145	3479247061	Electric 47μF 25V	1C	
C146	3479247061	Electric 47μF 25V	1C	
C147L/R	3579101130	Ceramic 100PF 50V	1C	
C148L/R	3579101130	Ceramic 100PF 50V	1C	
C149L/R	3579331130	Ceramic 330PF 50V	1C	
C151	3479247031	Electric 47μF 25V	1C	
C152	3479247031	Electric 47μF 25V	1C	
C153L/R	3579101130	Ceramic 100PF 50V	1C	
C154L/R	3579101130	Ceramic 100PF 50V	1C	
C155L/R	3579331130	Ceramic 330PF 50V	1C	
C157	3479247031	Electric 47μF 25V	1C	
C158	3479247031	Electric 47μF 25V	1C	
C159L/R	3579101130	Ceramic 100PF 50V	1C	
C160L/R	3579101130	Ceramic 100PF 50V	1C	
C161L/R	3579331130	Ceramic 330PF 50V	1C	
C163	3479247031	Electric 47μF 25V	1C	
C164	3479247031	Electric 47μF 25V	1C	
C165L/R	3579101130	Ceramic 100PF 50V	1C	
C166L/R	3579101130	Ceramic 100PF 50V	1C	
C167L/R	3579331130	Ceramic 330PF 50V	1B,1C	
C169	3479247031	Electric 47μF 25V	1B	
C170	3479247031	Electric 47μF 25V	1C	
C171L/R	3579101130	Ceramic 100PF 50V	1B	
C172L/R	3579101130	Ceramic 100PF 50V	1B	
C173L/R	3579331130	Ceramic 330PF 50V	1B	
C175	3479247031	Electric 47μF 25V	1B	
C176	3479247031	Electric 47μF 25V	1B	
C201L/R	2479210971	Electric 1μF 50V	2D,3D	
C202L/R	3679102120	Mylar 0.001μF 100V	3D	
C203L/R	3579220130	Ceramic 22PF 50V	3D	
C204L/R	3579221130	Ceramic 220PF 50V	3D	
C205L/R	3579473530	Ceramic 0.047μF 50V	3D	
C206L/R	3658225201	Tantal 2.2μF 16V	3D	
C208L/R	3409247061	Electric 47μF 35V	3D	
C209L/R	3409247061	Electric 47μF 35V	3D	
C211L/R	3579331130	Ceramic 330PF 50V	3C,3D	
C211L/R	3579221130	Ceramic 220PF 50V	3C,3D	
C212L/R	3579101130	Ceramic 100PF 50V	2B	
C221L/R	3579681130	Ceramic 680PF 50V	2B	
C222L/R	3658474201	Tantal 0.47μF 16V	2B	
C231L/R	3658225201	Tantal 2.2μF 16V	3B	

Ref.No.	Parts No.	Description	Position	Version
C232L/R	3679102120	Mylar 0.001μF 100V	3B	
C233L/R	3579220130	Ceramic 22PF 50V	3B	
C235L/R	3579102130	Ceramic 1000PF 50V	3B	
R236L/R	3579473530	Ceramic 0.047μF 50V	3B	
C237L/R	3579100030	Ceramic 10PF 50V	3B	
C238L/R	3568225201	Tantal 2.3μF 16V	3B	
C239L/R	3679102120	Tantal 0.001μF 100V	3B	
C240L/R	3409247061	Electric 47μF 35V	3C	
C241L/R	3409247061	Electric 47μF 35V	3C	
C251L/R	3479210871	Electric 0.1μF 50V	3B	
C252L/R	3679102120	Mylar 0.001μF 100V	3B	
C253L/R	3579331130	Ceramic 330PF 50V	3B	
C254L/R	3479247031	Electric 47μF 16V	3B	
C255L/R	3479210061	Electric 10μF 35V	3B	
C256L/R	3679393120	Mylar 0.039μF 100V	3B	
C257L/R	3679393120	Mylar 0.039μF 100V	3A	
C258L/R	3479215871	Electric 0.15μF 50V	3A	
C259L/R	3479215871	Electric 0.15μF 50V	3A	
C260L/R	3679392120	Mylar 0.0039μF 100V	3A	
C261L/R	3679392120	Mylar 0.0039μF 100V	3A	
C262L/R	3679822120	Mylar 0.0082μF 100V	3A	
C263L/R	3679822120	Mylar 0.0082μF 100V	3A	
C264L/R	3479247971	Electric 4.7μF 50V	3A	
C265L/R	3679102120	Mylar 0.001μF 100V	3A	
C266L/R	3409247071	Ceramic 47PF 50V	3A	
C267	3479247041	Electric 47μF 25V	3A	
C268	3479247041	Electric 47μF 25V	3A	
C269L/R	3579509030	Ceramic 5PF 50V	3A	
C271L/R	3479210061	Electric 10μF 35V	3A	
C272L/R	3609823120	Mylar 0.082μF 100V	3A	
C273L/R	3679392120	Mylar 0.0039μF 100V	3A	
C274L/R	3679152120	Mylar 0.0015μF 100V	3A	
C275L/R	3479210061	Electric 10μF 35V	3A	
C277L/R	3658225201	Tantal 2.2μF 16V	3A	
C278L/R	3679102120	Mylar 0.001μF 100V	3A	
C279	3479247041	Electric 47μF 25V	3A	
C280	3479247041	Electric 47μF 25V	3A	
C281L/R	3609104120	Mylar 0.1μF 100V	2A	
C282L/R	3609104120	Mylar 0.1μF 100V	2A	
C283L/R	3658225201	Tantal 2.2μF 16V	2B	
C284L/R	3679102120	Mylar 0.001μF 100V	2A	
C285	3479247041	Electric 47μF 25V	2A	
C286	3479247041	Electric 47μF 25V	2A	
C301L/R	3568225201	Tantal 2.2μF 16V	2A	
C302L/R	3679102120	Mylar 0.001μF 100V	2A	
C303L/R	3658225201	Tantal 2.2μF 16V	2A	
C304L/R	3679102120	Mylar 0.001μF 100V	1A	
C305	3479247041	Electric 47μF 25V	1A	
C306	3479247041	Electric 47μF 25V	1A	
C307L/R	3658225201	Tantal 2.2μF 16V	2B	
C309L/R	3479222041	Electric 22μF 25V	2B	
C310L/R	3679102120	Mylar 0.001μF 100V	2B	
C311	3479247041	Electric 47μF 25V	2B	
C312	3479247041	Electric 47μF 25V	2B	
C321L/R	3479210971	Electric 1μF 50V	1B	
C322L/R	3409247121	Electric 470μF 10V	1B	
C324	3409222161	Electric 220μF 35V	1B	
C325	3409222161	Electric 220μF 35V	1B	
C341L/R	3479247971	Electric 4.7μF 50V	1B	
C342L/R	3679102120	Mylar.0.001μF 100V	1B	
C343L/R	3479122041	Electric 22μF 25V	1B	
C344L/R	3679102120	Mylar 0.001μF 100V	1B	
C345	3479247041	Electric 47μF 25V	1B	
C346	3479247041	Electric 47μF 25V	1B	
C401	3409210271	Electric 1000μF 50V	2A	
C402	3409210271	Electri 1000μF 50V	2A	
C403	3679473120	Mylar 0.047μF 100V	2A	
C404	3679473120	Mylar 0.047μF 100V	2A	
C405	3679473120	Mylar 0.047μF 100V	2A	
C406	3679473120	Mylar 0.047μF 100V	2A	D
C407	3509103450	Ceramic 0.01μF 500V	1A	D
C408	3509103450	Ceramic 0.01μF 500V	1A	D
C409	3409247171	Electric 470μF 50V	1A	
C410	3409247171	Electric 470μF 50V	1A	
C411	3579103530	Ceramic 0.01μF 50V	1A	
C412	3579103530	Ceramic 0.01μF 50V	1A	
C413	3579103530	Ceramic 0.01μF 50V	1A	
C414	3479210061	Electric 10μF 35V	1A	
C415	3479210061	Electric 10μF 35V	1A	
C416	3409210161	Electric 10μF 35V	1A	
C417	3409210161	Electric 10μF 35V	1A	

Ref.No.	Parts No.	Description	Position	Version
C418	3409247171	Electric 470μF 50V	2A	
C419	3409247171	Electric 470μF 50V	2A	
C420	3409210141	Electric 100μF 25V	2A	
C421	3409210141	Electric 100μF 25V	2A	
C422	3579104534	Ceramic 0.1 μF 50V	2A	
C423	3579104534	Ceramic 0.1μF 50V	2A	
C432	3409210141	Electric 100μF 25V	1A	
C433	3479247971	Electric 4.7μF 50V	1B	

FRONT BOARD 4002117700

Ref.No.	Parts No.	Description	Position	Version
• DIODES				
D801	2058306101	IN 4148	2A	
D802	2058306101	IN 4148	2A	
D803	2058306101	IN 4148	2A	
D804	2058306101	IN 4148	2A	
• RESISTORS				
R270L/R	3069471970	C.F 470ohm 1/6 WJ	2B	
R810	3069473970	C.F 47K ohm 1/6 WJ	2A	
R811	3069473970	C.F 47K ohm 1/6 WJ	2A	
R812	3069473970	C.F 47K ohm 1/6 WJ	2A	
R813	3069473970	C.F 47K ohm 1/6 WJ	2A	
• CAPACITORS				
C276L/R	3679102120	Mylar 0.001μF 100V	2A	
C803	3658100195	Tantal 10μF 35V	2A	
C804	3658100195	Tantal 10μF 35V	2A	

H.P BOARD 4002117760

Ref.No.	Parts No.	Description	Position	Version
• RESISTORS				
R329L/R	3069331970	C.F 330ohm 1/6 WJ	2B	
R330L/R	3069100970	C.F 10ohm 1/6 WJ	2B	
• CAPACITOR				
C323L/R	3579561230	Ceramic 560PF 50V	2B	

LED BOARD 4002117710

Ref.No.	Parts No.	Description	Position	Version
• RESITORS				
R601	3069102970	C.F 1K ohm 1/6 WJ	2B	
R602	3069102970	C.F 1K ohm 1/6 WJ	2A	
R603	3069102970	C.F 1K ohm 1/6 WJ	2A	
R604	3069132970	C.F 1.3K ohm 1/6 WJ	2A	
R605	3069102970	C.F 1K ohm 1/6 WJ	2B	
• DIODES				
D601	2308220507	SLV-56DC3	1B	
D602	2308220507	SLV-56DC3	1B	
D603	2308220507	SLV-56DC3	1B	
D604	2308220507	SLV-56DC3	1B	
D605	2308220507	SLV-56DC3	1B	
D606	2308220507	SLV-56DC3	1A	
D607	2308220507	SLV-56DC3	1A	
D608	2308220507	SLV-56DC3	1A	
D609	2308220507	SLV-56DC3	1A	
D610	2308220130	SLV-56URC	1A	
D611	2308220507	SLV-56DC3	2B	
D612	2308220507	SLV-56DC3	2B	
D613	2058599104	Zener DZ-5.6BM	2B	

Ref.No.	Parts No.	Description	Position	Version
• POWER TRANSFOMERS	⚠			
	2828057101			A
	2828059601			B
	2828059701			C,D,F
	2828059801			E

SUB BOARD 4002117720

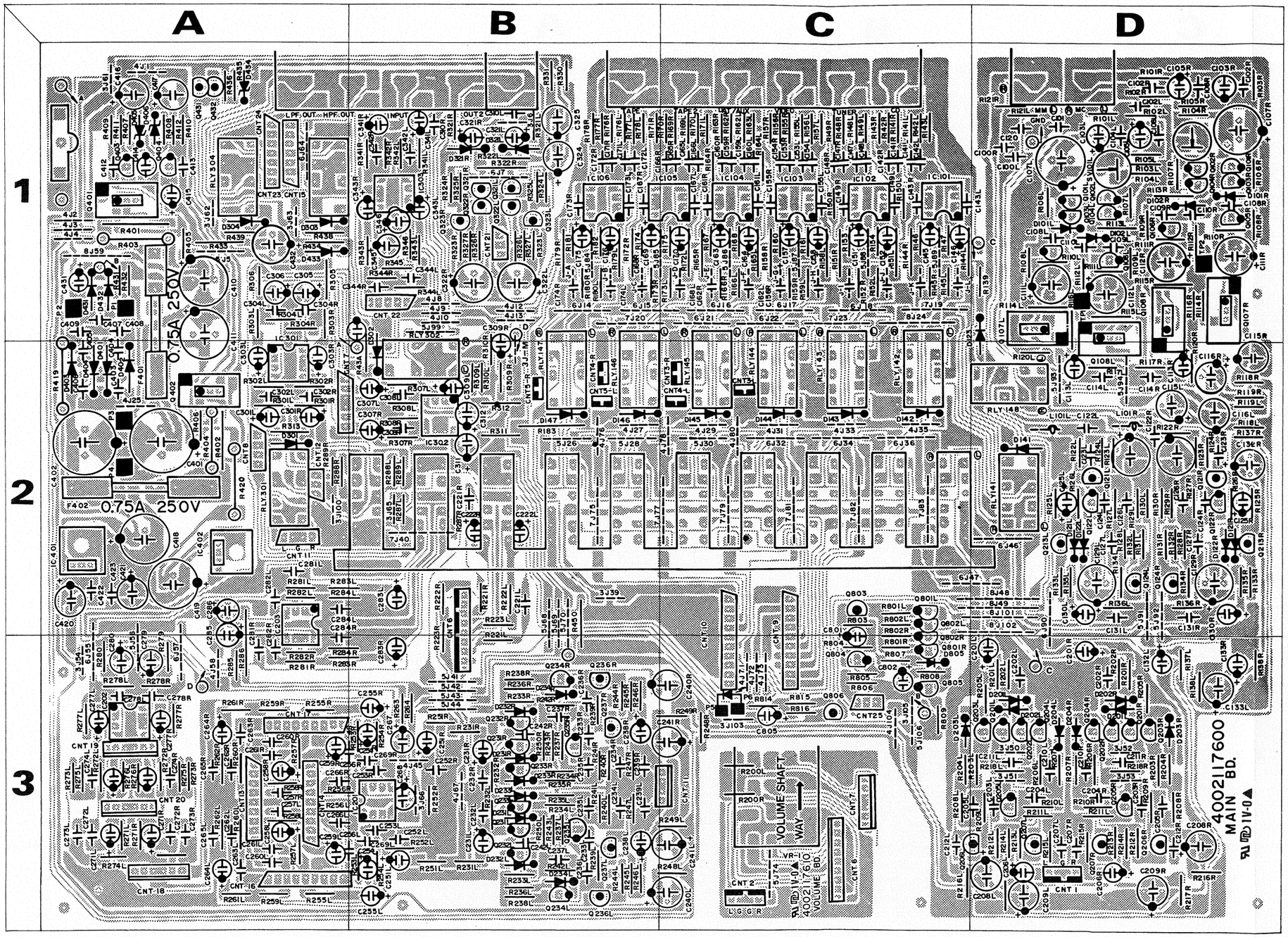
Ref.No.	Parts No.	Description	Position	Version
• ICS				
IC501	2168020106	NJM 2068DD	1A	
IC 502	2168020106	NJM 2068DD	1A	
IC503	2168020106	NJM 2068DD	1A	
IC504	2168020106	NJM 2068DD	1A	
• RESISTORS				
R501L/R	3069473970	C.F 47K ohm 1/6 WJ	1A	
R502L/R	3069473970	C.F 47K ohm 1/6 WJ	1A	
R503L/R	3069471970	C.F 470ohm 1/6 WJ	1A	
R504L/R	3069104970	C.F 100K ohm 1/6 WJ	1A	
R505	3069101970	C.F 100ohm 1/6 WJ	1A	
R506	3069101970	C.F 100ohm 1/6 WJ	1A	
R507L/R	3069473970	C.F 47K ohm 1/6 WJ	1A	
R508L/R	3069473970	C.F 47K ohm 1/6 WJ	1A	
R509L/R	3069471970	C.F 470ohm 1/6 WJ	1A	
R510L/R	3069104970	C.F 100K ohm 1/6 WJ	1A	
R511L/R	3069153970	C.F 1K K ohm 1/6 WJ	1A	
R512L/R	3069333970	C.F 33K ohm 1/6 WJ	1A	
R513L/R	3069471970	C.F 470ohm 1/6 WJ	1A	
R514L/R	3069104970	C.F 100K ohm 1/6 WJ	1A	
R515L/R	3069623970	C.F 62K ohm	1A	
R516L/R	3069623970	C.F 33K ohm 1/6 WJ	1A	
R517L/R	3069471970	C.F 470ohm 1/6 WJ	1A	
R518L/R	3069104970	C.F 100K ohm	1A	
• CAPACITORS				
C501L/R	3679822120	Mylar 0.008μF 100V	1A	
C502L/R	3609123122	Mylar 0.012μF 100V	1A	
C503L/R	3409247962	Electric 4.7μF 35V	1A	
C505	3409247032	Electric 47μF 16V	1A	
C506	3409247032	Electric 47μF 16V 16V	1A	
C507L/R	3679273120	Mylar 0.027μF 100V	1A	
C509L/R	3679183120	Mylar 0.027μF 100V	1A	
C510L/R	3409247962	Electric 4.7μF 35V	1A	
C511L/R	3679473120	Mylar 0.047μF 100V	1A	
C512L/R	3679473120	Mylar 0.047μF 100V	1A	
C513L/R	3409247962	Electric 4.7μF 35V	1A	
C514L/R	3679102120	Mylar 0.001μF 100V	1A	
C515L/R	3679473120	Mylar 0.047μF 100V	1A	
C516L/R	3679473120	Mylar 0.047μF 100V	1A	
C517L/R	3409247962	Electric 4.7μF 35V	1A	
C518L/R	3679473120	Mylar 0.001μF 100V	1A	

JACK BOARD 4002117730

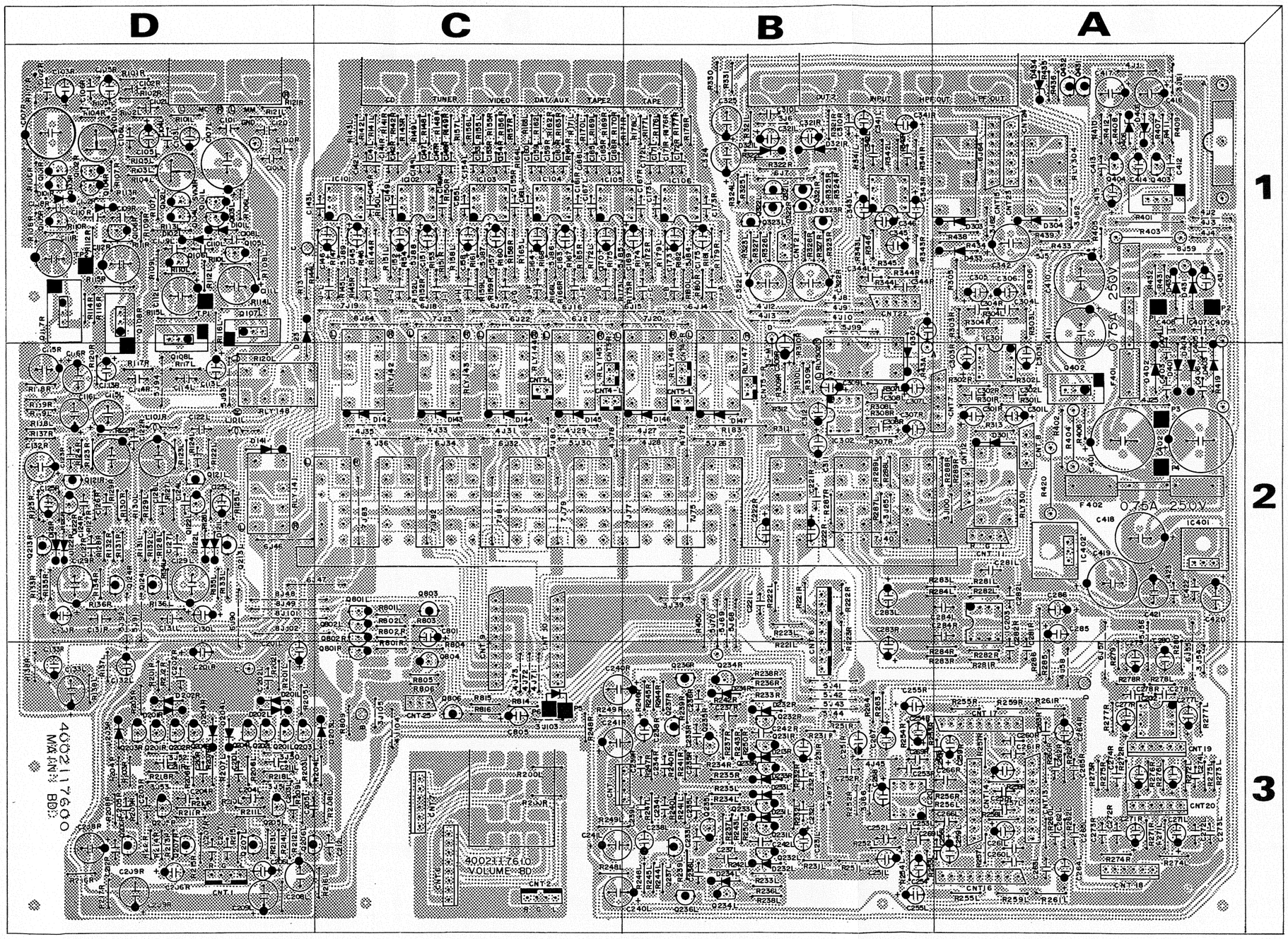
Ref.No.	Parts No.	Description	Position	Version
• RESISTORS		C.F 1K ohm 1/6 WJ		
R191L/R	3069102970	C.F 1K ohm 1/6 WJ	2A	
R192L/R	3069102970	C.F 1K ohm 1/6 WJ	2A	
R193L/R	3069102970	C.F 1K ohm 1/6 WJ	2A	
• CAPACITORS				
C191L/R	3579101130	Ceramic 100PF 50V	2A	
C192L/R	3579101130	CeramiC 100PF 50V	2A	D
C193L/R	3579101130	CeramiC 100PF 50V	2A	D
C194L/R	3579101130	CeramiC 100PF 50V	2A	
C195L/R	3579101130	CeramiC 100PF 50V	2A	D
C196L/R	3579101130	CeramiC 100PF 50V	2A	

Top & Bottom View of P.C Boards

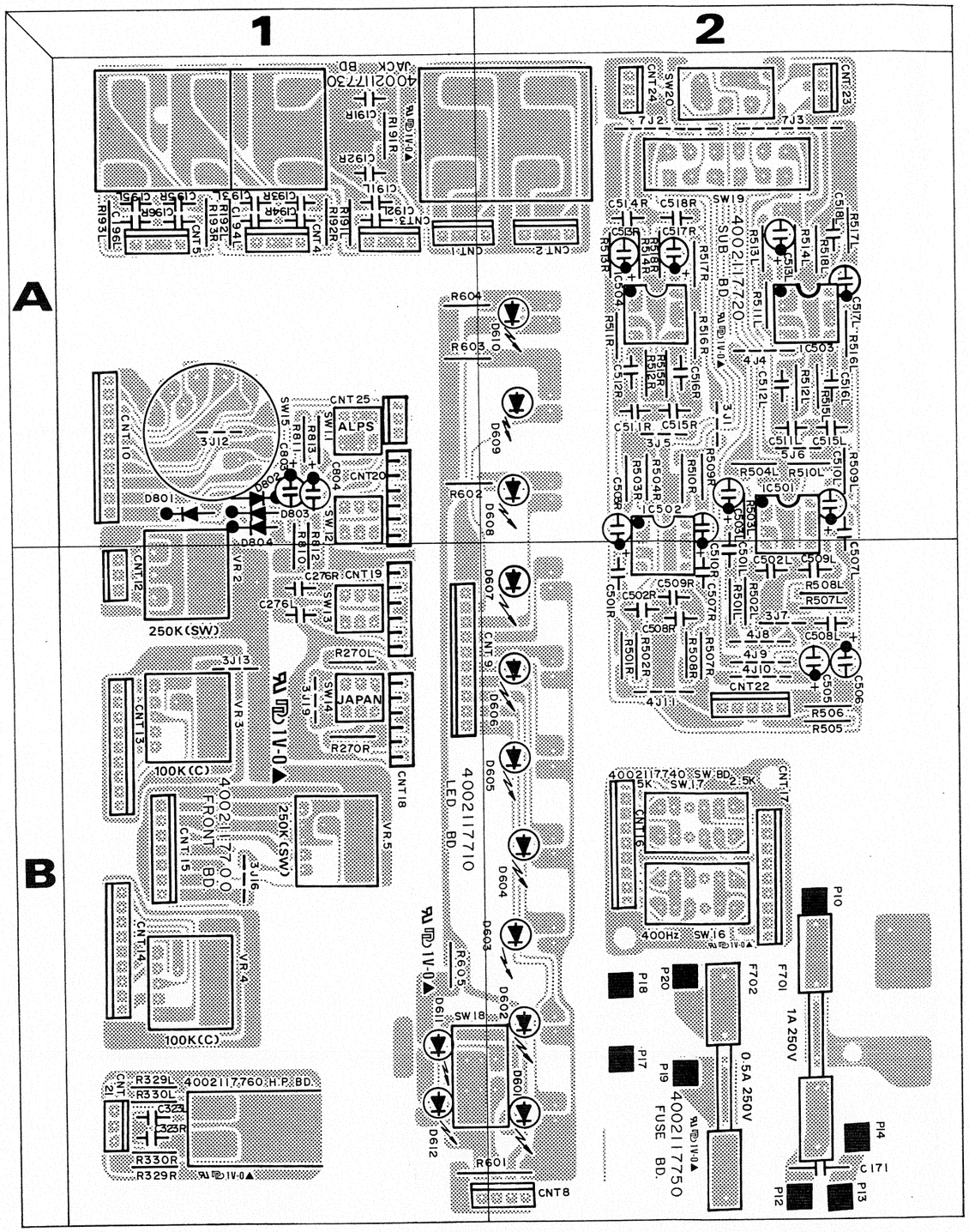
MAIN BOARD 4002117600 – TOP VIEW



– BOTTOM VIEW

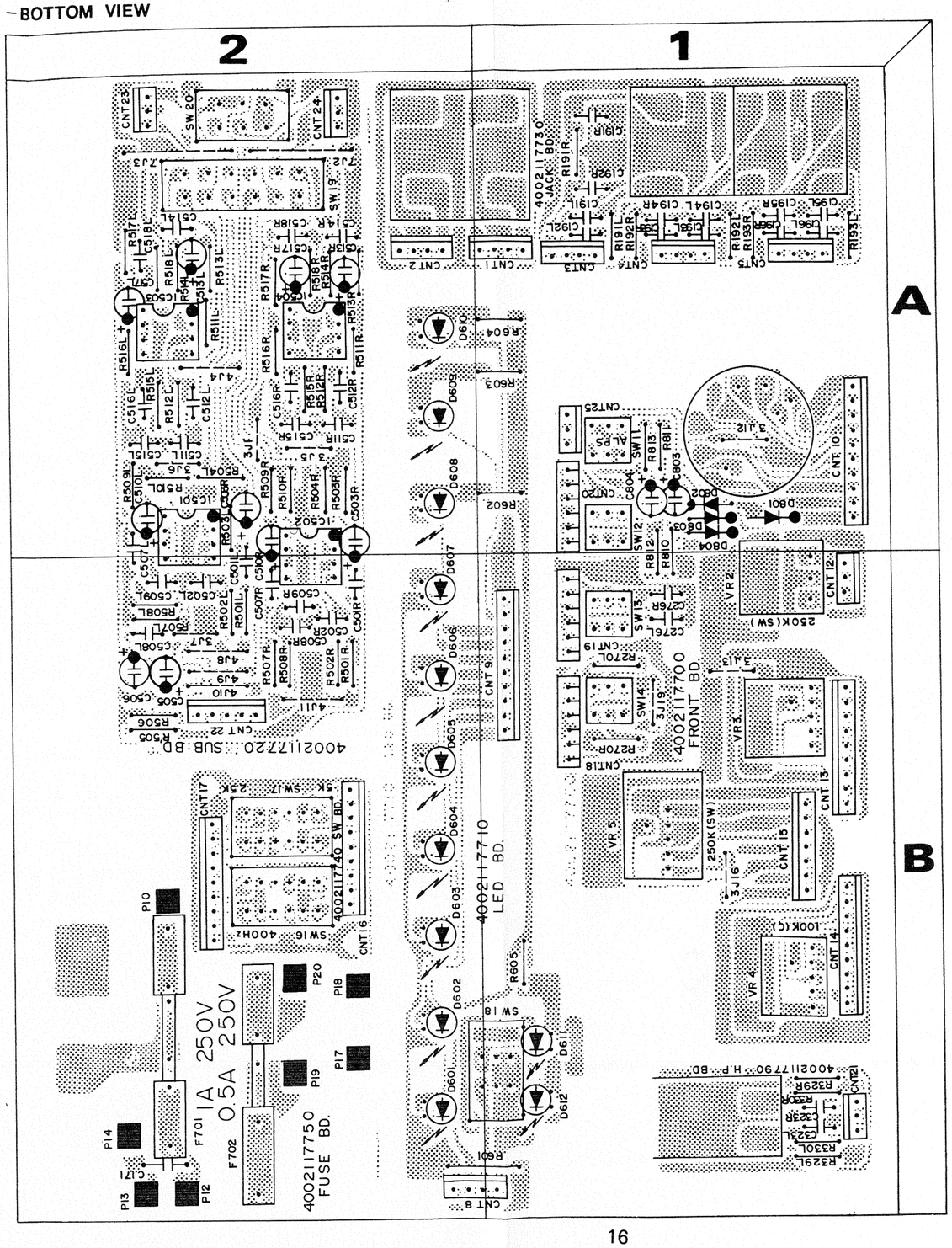

D
C
B
A
1
2
3
CD
TUNER
VIDEO
DAT/AUX
TAPE2
TAPE
INPUT
REC OUT
LINE OUT
0.75A
250V
F402
C418
IC401
400211760
MAIN BD
400211760
VOLUME BD
CNT1
CNT2

FRONT BOARD 4002117700 – TOP VIEW



15

– BOTTOM VIEW

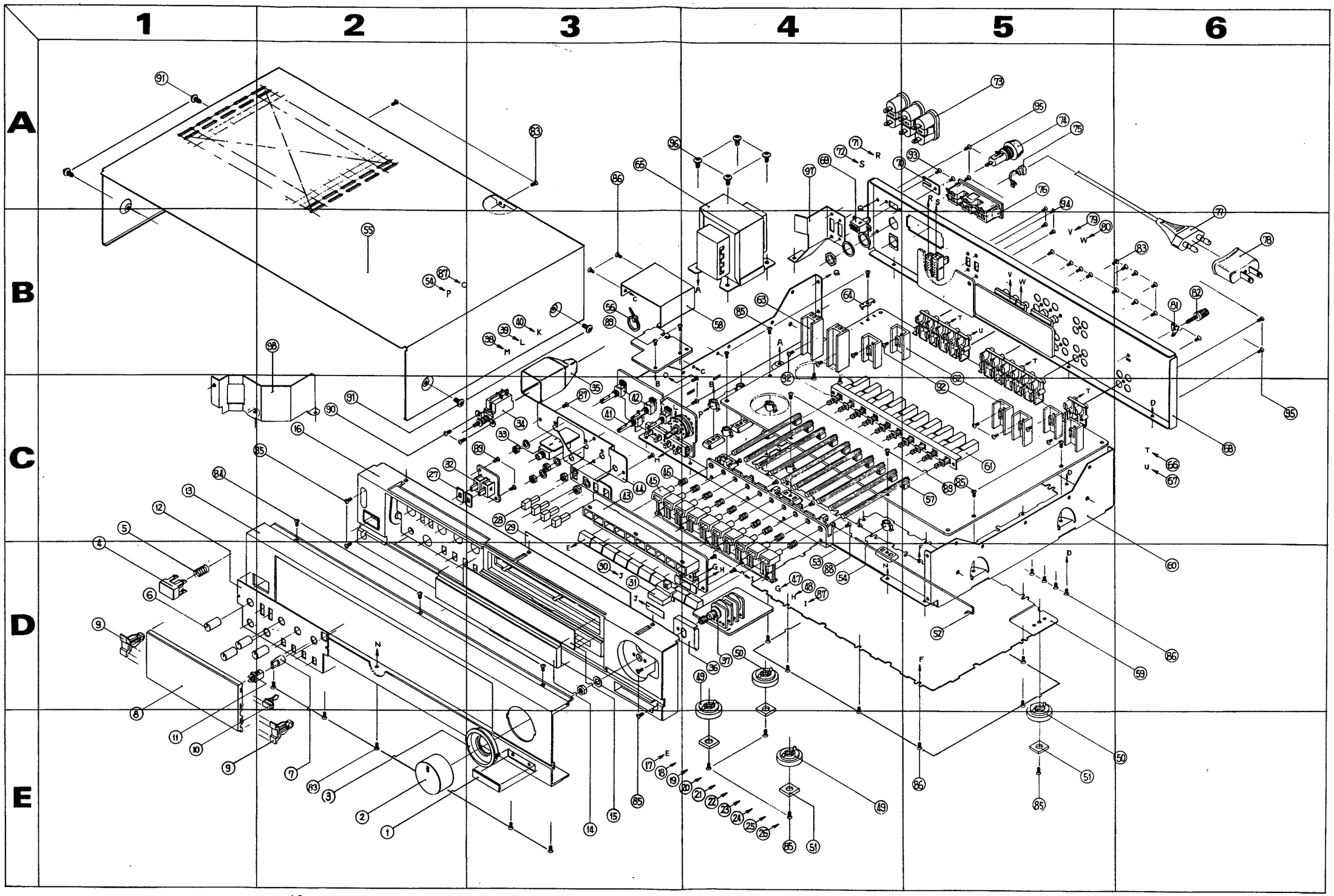


16

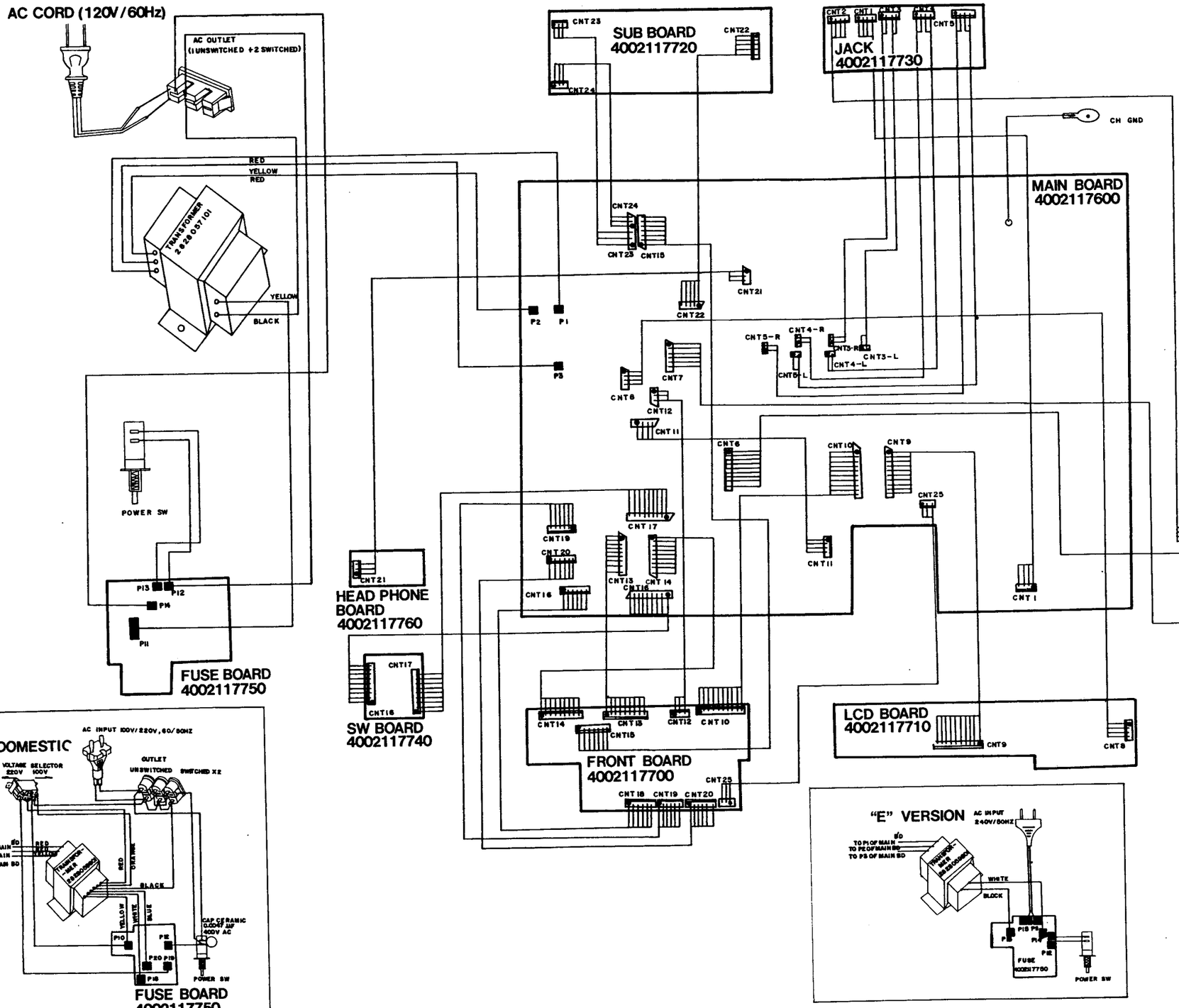
Mechanical Parts List & Exploded View of Cabinet & Chassis

NO.	PARTS NO.	DESCRIPTION	POSITION	Q'TY	VERSION
1	048535019011	BADGE	A2	1	A~F
2	048643003611	KNOB ROTARY(VR)	A2	1	
3	8523009220	RING DECORATION	A2	1	
4	048545048211	BUTTON POWER	C1	1	A~F
5	6555004380	SPRING POWER	C1	1	
6	048545050711	KNOB ROTARY(TONE)	C1	4	
7	048545050811	KNOB ROTARY(SW)	A2	1	
8	048603000411	DOOR	B1	1	
9	6045006410	DOOR LOCKER	B1	2	
10	6305004210	SHAFT LOCKER	B1	1	
11	7318000110	SW. LOCKER	B1	1	
12	048623003811	PLATE DECORATION	C1	1	
13	048602015511	PANEL FRONT	C1	1	
14	8553008210	WINDOW LED	A3	1	
15	048533005111	PLATE LED METER.	A3	1	
16	048521004311	BODY FRONT	D2	1	
17	048545050611	BTN CAP(MUTE)	A3	1	
18	048545050612	BTN CAP(SUB FILTER)	A3	1	
19	048545050613	BTN CAP(LOUD)	A3	1	
20	048545050614	BTN CAP(TAPE 2)	A4	1	
21	048545050615	BTN CAP(TAPE 1)	A4	1	
22	048545050616	BTN CAP(DAT /AUX)	A4	1	
23	048545050617	BTN CAP(VIDIO)	A4	1	
24	048545050618	BTN CAP(TUNER)	A4	1	
25	048545050619	BTN CAP(CD)	A4	1	
26	048545050620	BTN CAP(PHONO)	A4	1	
27	8535019410	PLATE SUB	C2	2	
28	8545050910	BUN PUSH(PHONO)	C3	4	
29	8535022510	DIFFUSER(A)	C3	1	
30	8535020010	DIFFUSER(B)	C3	1	
31	048545050511	BTN DIRECT	C3	1	
32	4618006010	SW SLIDE(4/2)	C2	2	
33	4438000810	JACK PHONE	C3	1	
34	4628034210	SW POWER	C3	1	A,B,C,E,F
	4628005410	SW POWER	C3	1	D
35	3835002710	COVER POWER SW	D3	1	
36	6165121210	SHIELD FENCE	B4	1	
37	3208052510	VR 50KA× 4	B4	1	
38	4628051510	SW PUSH(4KEY)	D3	1	
39	4608002110	SW ROTARY(1/8)	D3	1	
40	3208052710	VR ROTARY(250KSW×1)	D3	1	
41	3208052810	VR ROTARY(250KSW×2)	D3	1	
42	3208052610	VR ROTARY(100KC×2)	D3	2	
43	6043005310	HOLDER LED	C3	1	
44	6505082110	BKT DECORATION	C3	1	
45	6053001710	BUTTON BASE	C3	2	
46					NOT USED
47	4628038810	SW PUSH(1KEY)	C4	1	
48	8655000710	REFLECTOR LED	C4	1	
49	046035101421	FOOT A	A4,B4	2	A~F
50	6035101420	FOOT B	B4,B6	2	A
	046035101421	FOOT A	B4,B6	2	B,C,D,E,F
51	6725002110	CUSHION FOOT	A4,A5	4	
52	6555603710	SPRING GUIDE BUTTON	B5	1	
53	6043005410	GUIDE BUTTON	C4	1	
54	6705004220	SPACIER	C4,E2	7	
55	046122016111	CABINET TOP	E2	1	
56	6528000410	CABLE TIE	D3	1	
57	6305003910	SHAFT BTN	C5	10	
58					NOT USED
59	6123009110	COVER BOTTOM	B6	1	
60	6121602410	CH. MAIN	C6	1	
61	4628051610	SW PUSH(20KEY)	C5	1	
62	7505202410	H/S REG. TR	D5	6	
63	7505201940	H/S REG. TR	D4	2	
64	4235000110	PLATE GND	E4	1	
65		TRANSFORMER	E3	1	
66	4438101910	JACK RCA	C6	6	
67	4438102110	JACK RCA	C6	1	
68	046102022421	CH BACK	D6	1	A
	046102022431	CH BACK	D6	1	B
	046102022441	CH BACK	D6	1	C
	046102022451	CH BACK	D6	1	D
	046102022461	CH BACK	D6	1	E
	046102022471	CH BACK	D6	1	F
69					NOT USED
70					NOT USED
71	4618001610	SW SLIDE(2/2)	F4	1	
72	4618001810	SW SLIDE(4/2)	E4	1	
73					NOT USED
74					NOT USED

NO.	PARTS NO.	DESCRIPTION	POSITION	Q'TY	VERSION
75	6518000710	STOPPER POWER CORD	F5	1	A,B
	6518000111	STOPPER POWER CORD	F5	1	C,D,F
	6513000210	STOPPER POWER CORD	F5	1	E
76	4448100810	OUT LET AC(6P)	E5	1	A,B
77	4308001410	CORD AC POWER	E6	1	A,B
	4308000430	CORD AC POWER	E6	1	C,F
	4308000430	CORD AC POWER	E6	1	E
	4308005010	CORD AC POWER	E6	1	D
78					NOT USED
79	4438102010	JACK RCA(4P)	E5	2	
80	4438102210	JACK RCA(2P)	E5	1	
81	4408103710	GND TERMINAL	D6	1	
82					NOT USED
83	8119230083	SCREW # 2 PTC 3×8B	A2,E6,F3	19	
84	8129230081	SCREW # 2FTC 3×8Y	C1	3	
85	8159230081	SCREW # 2 WPTC 3×8Y	A3,A4,A5 C5,D2,D4	10	
86	8109230061	SCREW # 2 BTC 3×6Y	A5,B6,E,3	13	
87	8109230101	SCREW # 2 BTC 3×10Y	C4,D3,E2	8	
88	8159230101	SCREW # 2 WPTC 3×10Y	C4	4	
89	8159230161	SCREW # 2 WPTC 3×16Y	C5,D3	7	
90	8119430081	SCREW SAM 3×8Y	D2	2	
91	8159440083	SCREW WSAM 4×8B	D2,F1	4	
92	8109230081	SCREW # 2 BTC 3×8Y	D4,D5	10	
93	8119330083	SCREW # 3 PTC 3×8B	E5	2	
94	8019126043	SCREW PM 2.6×4B	E5	4	
95	8119430063	SCREW SAM 3×6B	D6,F5	4	
96	8159440081	SCREW WSAM 4×8Y	F3	4	
97	6165129910	SHILED FENCE(A)	E4	1	A,B
98	6165130010	SHIELD FENCE(B)	D2	1	A~F


1
2
3
4
5
6
A
B
C
D
E

Point to Point Wiring Diagram



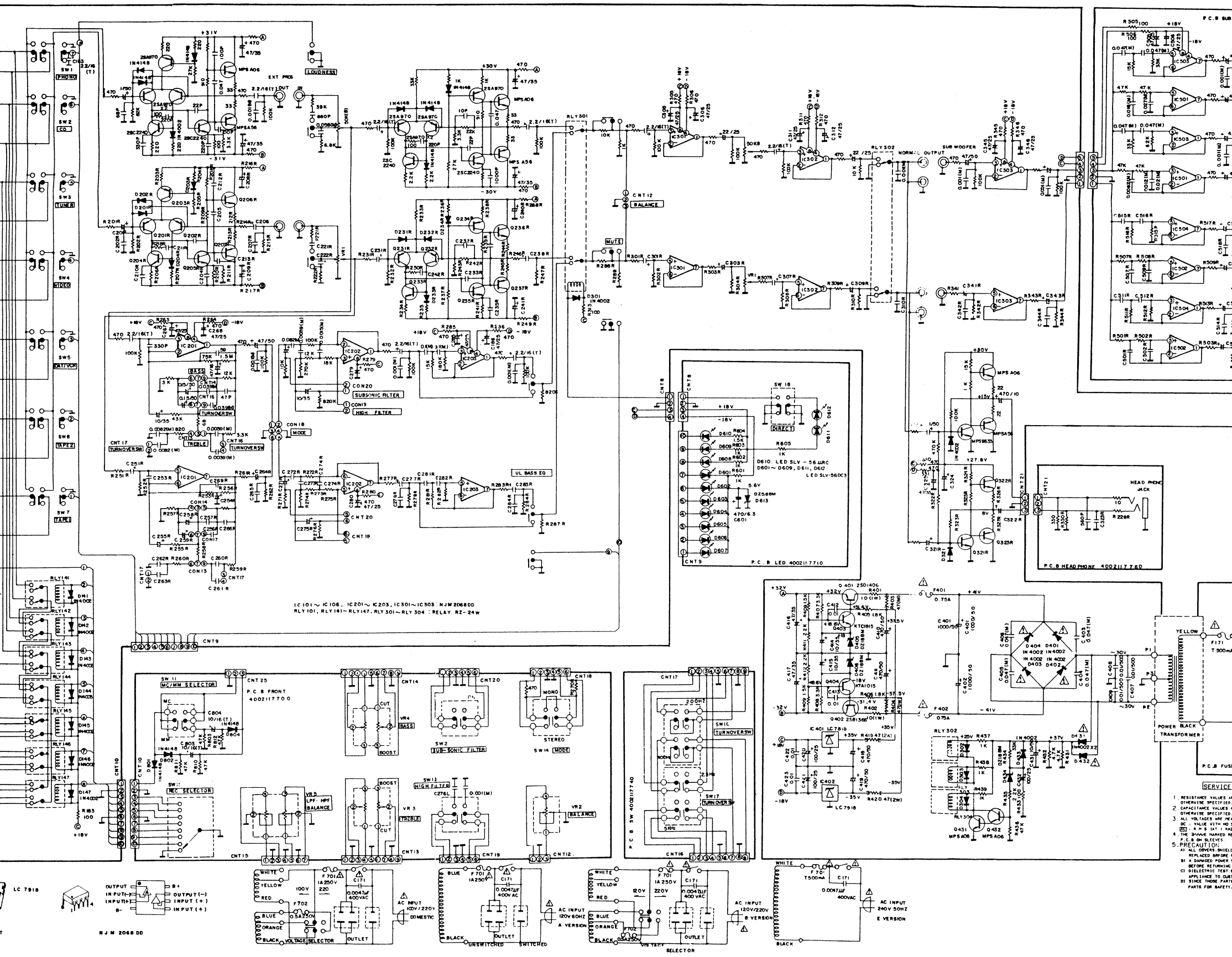
Sch

PCB MAIN 4002117600
PCB JACK 4002117730
PCB FRONT 4002117700
SW1 PHONO
SW2 CD
SW3 TUNER
SW4 VIDEO
SW5 DAT/VCR
SW6 TAPE2
SW7 TAPE1
SW11 MC/MM SELECTOR
SW12 REC SELECTOR
LOUDNESS
BASS
TREBLE
TURNOVERSW
MODE
BALANCE
VOLTAGE SELECTOR
IC101 ~ IC106, IC201
RLY101, RLY141 ~ RLY147
2SA970
2SC2240
KTA1015
KTC1815
2SD1302
MPS A06
MPS A55
MPS 9633C
2SK117
2SB1366
2SD1406
LC 7818
LC 7918
NJM 2068 DD

C D E F

Schematic Diagram

AP 7020



C D E F

matic Diagram

AP7020

P.C.B SUB 4002117720
P.C.B LED 4002117710
P.C.B HEADPHONE 4002117760
P.C.B FUSE 4002117750
P.C.B SW 4002117740
SERVICE INFORMATION
1. RESISTANCE VALUES ARE INDICATED IN OHMS UNLESS OTHERWISE SPECIFIED. (K=1000, M=1000000)
2. CAPACITANCE VALUES ARE INDICATED IN MICROFARADS UNLESS OTHERWISE SPECIFIED. (P=MICRO-MICROFARAD)
3. ALL VOLTAGES ARE MEASURED WITH GROUND
DC : VALUE WITH NO SIGNAL
(AC) : R.M.S (AT 1 KHZ 8 OHM LOAD FULL SIGNAL)
4. THE ⚠ MARKED RESISTORS ARE MOUNTED ABOVE THE P.C.B ON SLEEVES.
5. PRECAUTION:
A) ALL COVERS, SHIELDS AND INSULATING SPACERS MUST BE REPLACED BEFORE RETURNING APPLIANCE TO CUSTOMER.
B) A DAMAGED POWER SUPPLY CORD MUST BE REPLACED BEFORE RETURNING APPLIANCE TO CUSTOMER.
C) DIELECTRIC TEST SHOULD BE DONE BEFORE RETURNING APPLIANCE TO CUSTOMER.
D) SINCE THOSE PARTS MARKED WITH ⚠ ARE CRITICAL PARTS FOR SAFETY, USE THE ONE DESCRIBED IN PARTS LIST.
IC301~IC303 : NJM2068DD
RLY301~RLY304 : RELAY RZ-24W
D610. LED SLV-56 URC
D601~D609, D611, D612 LED SLV-560C3
AC INPUT 100V/220V DOMESTIC
AC INPUT 120V 60HZ A VERSION
AC INPUT 120V/220V B VERSION
AC INPUT 240V 50HZ E VERSION
AC INPUT 220V 50HZ C.D.F VERSION
UNSWITCHED
SWITCHED
SELECTOR
BLACK
WHITE
YELLOW
RED
BLUE
ORANGE
POWER TRANSFORMER
SW POWER
SW2 SUB-SONIC FILTER
SW13 HIGH FILTER
SW14 MODE
SW17 TURN OVER SW
SW18 DIRECT
SW19 (1/2) CROSS OVER F
SW20 LP MODE
VR2 BALANCE
VR3 TREBLE
VR4 BASS
CNT12 BALANCE
MUTE
UL BASS EQ
HEAD PHONE JACK
SUB WOOFER
NORMAL OUTPUT
L-HPF OUT
L-LPF OUT
R-HPF OUT
R-LPF OUT
L.P.F HPF BALANCE
CROSS OVER F